Studies on the Utilization of Pentose by Microbiological Method : Pentose-Assimilable Yeasts. (II)

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Eel : about 30°C

The thermo-stability of these enzymes was examined with the results that the catalase with low optimum temperature was less stable on heating than that with high optimum temperature.

31. Studies on the Utilization of Pentose by Microbiological Method. Pentose-Assimilable Yeasts. (II)

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In order to verify the availability to the waste liquors from factories, for instance pressed juice of sweet potato (I) and sulphite pulp waste liquor (II), for manufacturing fodder yeasts, series of experiments were carried out with three strains of pentose-assimilable yeast (Torulopsis xylinus a, b, c) isolated by us.

(I) was adjusted to pH 4.5 by HCl, kept for 1 hour at 70°C and filtered. The filtrate was found to contain 5.50 g of sugars and 0.15 g of nitrogen in 100 c.c. Experiments were carried out with the dilute solution of (I) containing 2.50 g of sugars in 100 c.c. In some cases inorganic salts or malt extract were added to the diluted solution. In the case of shaking culture, the amount of remaining sugar and the yield of yeast were observed at 3, 6, 9, 12, and 24 hours' incubations. It is pointed out that, in every case, the consumption of sugar was attained to above 85%, and the percentage of the crop yield of yeast to the sugar consumed was found to be about 45%. Therefore any remarkable effect on the addition of inorganic salts or malt extract was never detected. The chemical compositions of the yeast thus obtained (7.38% ash, 49.10% crude protein, 3.50% crude fat and vitamin B_1 15.7γ) were found to be similar to those of the yeast obtained from ordinary medium.

(II) was refined as follows: the free SO_2 (1.98 g/L) was expelled by aeration and then by neutralization with $Ca(OH)_2$. The filtrate was found to contained 13.06 g of organic matters, 3.23 g of sugar (as glucose), 0.012 g of nitrogen and 0.99 g of free SO_2 in 100 c.c. Experiments were carried out with dilute solutions of the filtrate, in the same manner as was mentioned above. It is pointed out that the addition of nitrogen substances was necessary for the fermentation of (II), and such substances as $(NH_4)_2SO_4$, pressed juice of sweet potato and rice bran eytract were found to serve available sources of nitrogen. The yield of yeast, especially Torulopsis xylinus c, attained to a maximum on 24 hours' incubation, when sugar was consumed to 51.14% and the percentage of the crop yield of yeast to the sugar consumed was found to be 37.54%. These yeasts were concluded to be useful for fodder yeasts, from their chemical constituents.